BEFORE THE NEBRASKA PUBLIC SERVICE COMMISSION

In the Matter of the Commission, on its own motion, seeking to investigate whether the zones established in Docket No. C-2516 are appropriate in light of NUSF-26 findings and conclusions.	**Application No. C-3554/PI-112**

QWEST CORPORATION'S REPLY COMMENTS

Qwest Corporation ("Qwest") submits its reply comments to the *Order Opening Docket* dated February 28, 2006 (*"Order"*) as follows:

Introduction

Qwest commented extensively on the *Order's* proposed Unifying Methodology, and will not repeat those comments here. Qwest does, however, wish to briefly respond to the two sets of comments filed by other parties in this docket – the comments of Nebraska Technology and Telecommunications, Inc. ("NT&T") and those of Allo Communications, LLC ("Allo"), Mobius Communications Company ("Mobius"), and Pinpoint Communications, Inc. ("Pinpoint").

Qwest generally agrees with NT&T's arguments that any costs developed in this docket must be based on the total element long run incremental cost ("TELRIC") principles embodied in the 1996 Telecommunications Act, and that those costs "must be considered without regard to any Nebraska Universal Service Fund ("NUSF") support that may be received" by competitive carriers. Qwest disagrees, however, with NT&T's premise for making those comments. NT&T argues that the proposed reallocation of loop revenue will "effectively snuff[] out all meaningful competition" in the proposed out-of-town zones. Qwest's records indicate that under the current system, more than 99% of loops leased to competitive carriers are in-town loops.[1] The current system has already created perverse incentives for competitive carriers to serve in-town customers in Zones 2 and 3, because of the fact that excessive amounts of NUSF-26 support are ported to CLECs serving in-town loops (loops for which Qwest receives no NUSF-26 support). The proposed reallocation of unbundled network element ("UNE") loop revenue will only exacerbate the current problem of unfairly subsidized competition in towns and nearly nonexistent competition out of towns, because it would provide in-town loops to competitive carriers at rates far below their TELRIC cost.

Analysis Of Frost/Rosenbaum Paper Attached to Allo/Mobius/Pinpoint Comments

A portion of the comments of Allo, Pinpoint, and Mobius merits specific comment. A paper written by Tyler Frost and David Rosenbaum (FR) is attached to those comments, presumably in support of their position that "average loop cost is a function of population density." [p.4] A review of the FR analysis reveals that substantial variations in loop costs are left unexplained by variations in household density, which is the lone variable the FR analysis uses to explain these variations.

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[1] In this regard, the label Allo, Mobius, and Pinpoint assign to their joint comments – "Rural CETCs" – is somewhat inaccurate. Allo testified in the hearing on the first phase of Docket C-3448 that the business plan of these three competitive carriers is focused on obtaining in-town business customers. Hearing Transcript, Docket C-3448, page 30, lines 4-14. These carriers do not aim to serve truly rural customers, but rather customers in the smaller towns of Zones 2 and 3.

1. The FR Analysis Does a Poor Job of Explaining Variations in Loop Cost Estimates.

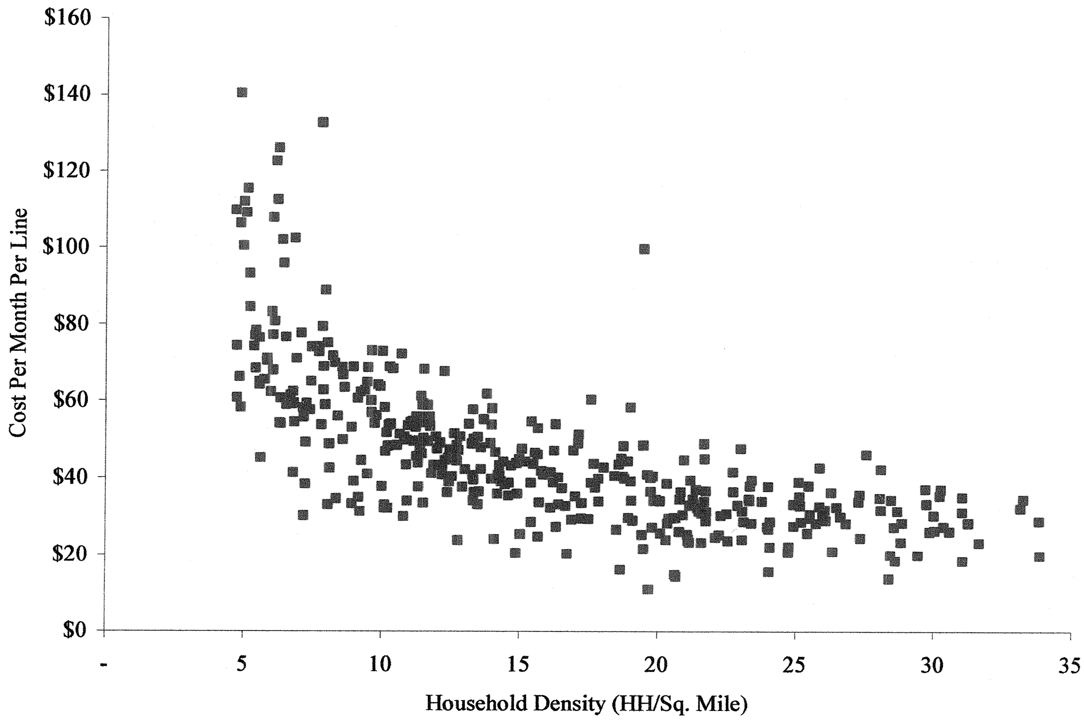
The FR paper includes the following incomplete statement about the fit of the regression model: "The Equation has an R^2 of 0.95, indicating that 95 percent of the variation in the ***natural log*** of loop cost can be explained by the variation in density." (emphasis added). While true within the methodology discussed in the FR paper, this statement is potentially misleading to the extent that it infers that the FR equation explains a similar portion of the variation in the *loop cost estimates* from the BCPM, which it does not. Variations in loop costs estimates are at issue, not the variations in the natural logs of loop costs. TELRIC carriers do not incur the natural log of cost, and CLECs, therefore, do not pay for unbundled loops based upon the natural log of loop cost estimates.

As shown below, when the FR equation is transformed from natural logs back into dollars and compared with the costs estimates from the BCPM, it is apparent that the equation does not explain a large portion of the variation in loop cost estimates from the BCPM. The following charts demonstrate this for the middle density group used in the FR analysis.

Figure 1 shows the loop cost estimates from the BCPM sorted by household density for the middle density group used in the FR analysis, 4.5 to 34 households per square mile. As shown, there is considerable variation in the loop cost estimates across the range of household densities.

Figure 1.

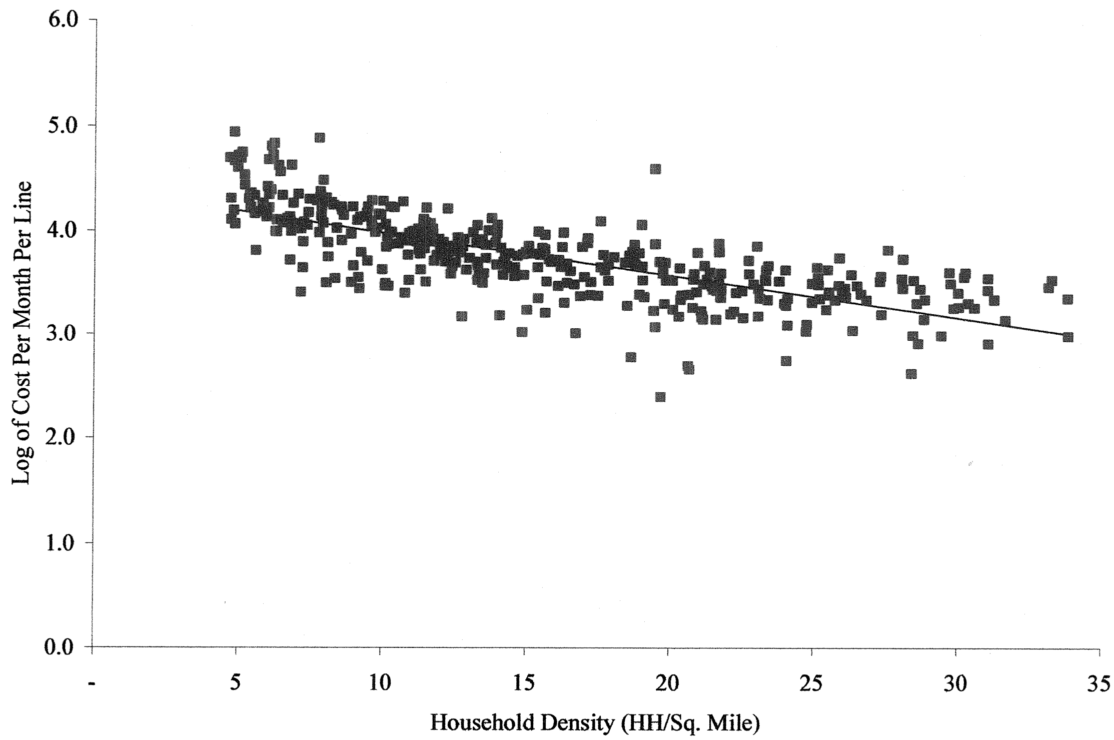
Loop Cost Estimates From BCPM
For the Middle Density Group in the FR Equation



The second chart shows the loop cost estimates from BCPM recast as natural logs. The FR equation for this density group is also shown on this chart. As shown: (1) taking natural logs compresses the loop cost estimates, thereby giving the appearance of less variation; and (2) the FR equation passes essentially through the center of this compressed data.

Figure 2.

Natural Log of Loop Cost Estimates From BCPM With the FR Fitted Line



A person with a ruler could draw a line that fits the data almost as well as the FR equation shown in Figure 2, and that line would, therefore, explain the vast majority of the variation in the natural logs of loop cost estimates.

The next chart shows the fit of the FR equation to the actual dollar values of the loop cost estimates from the BCPM (that are shown above in Figure 1). As shown, there is a substantial amount of variation in the BCPM cost estimates that are not captured in the FR equation.

Figure 3.

Loop Cost Estimates From BCPM
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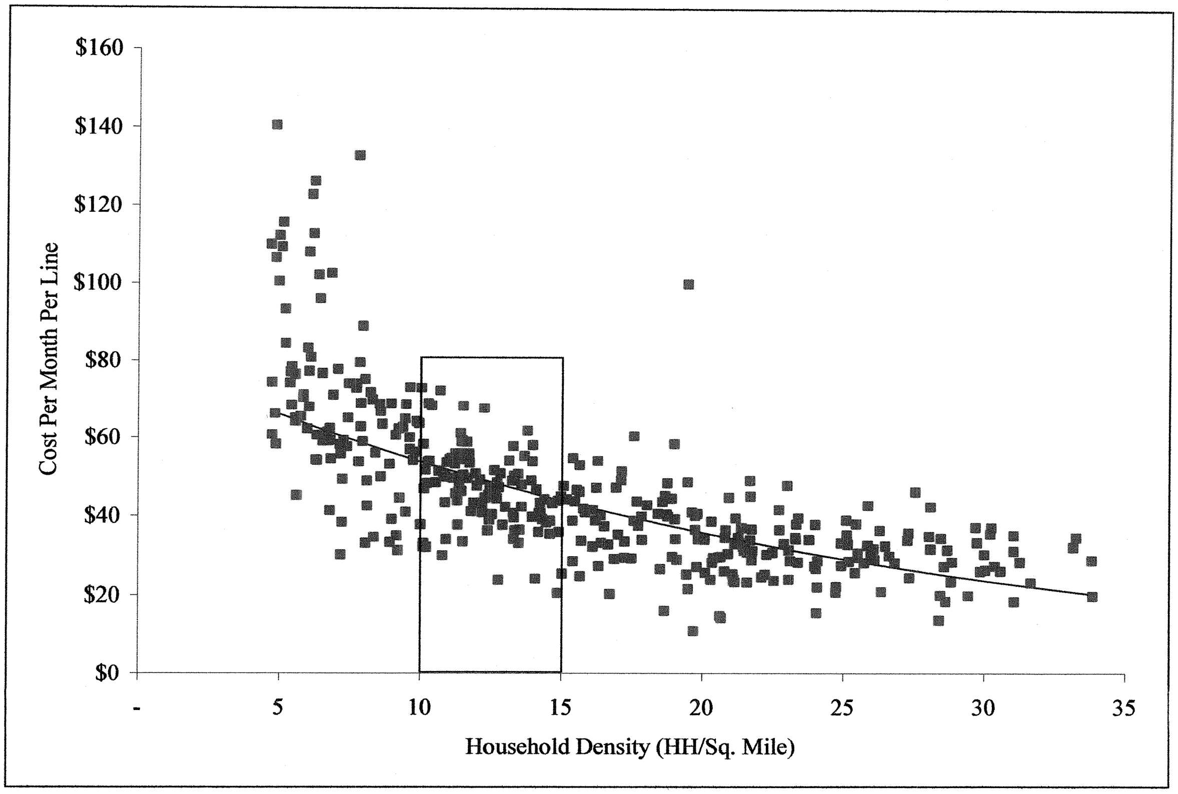


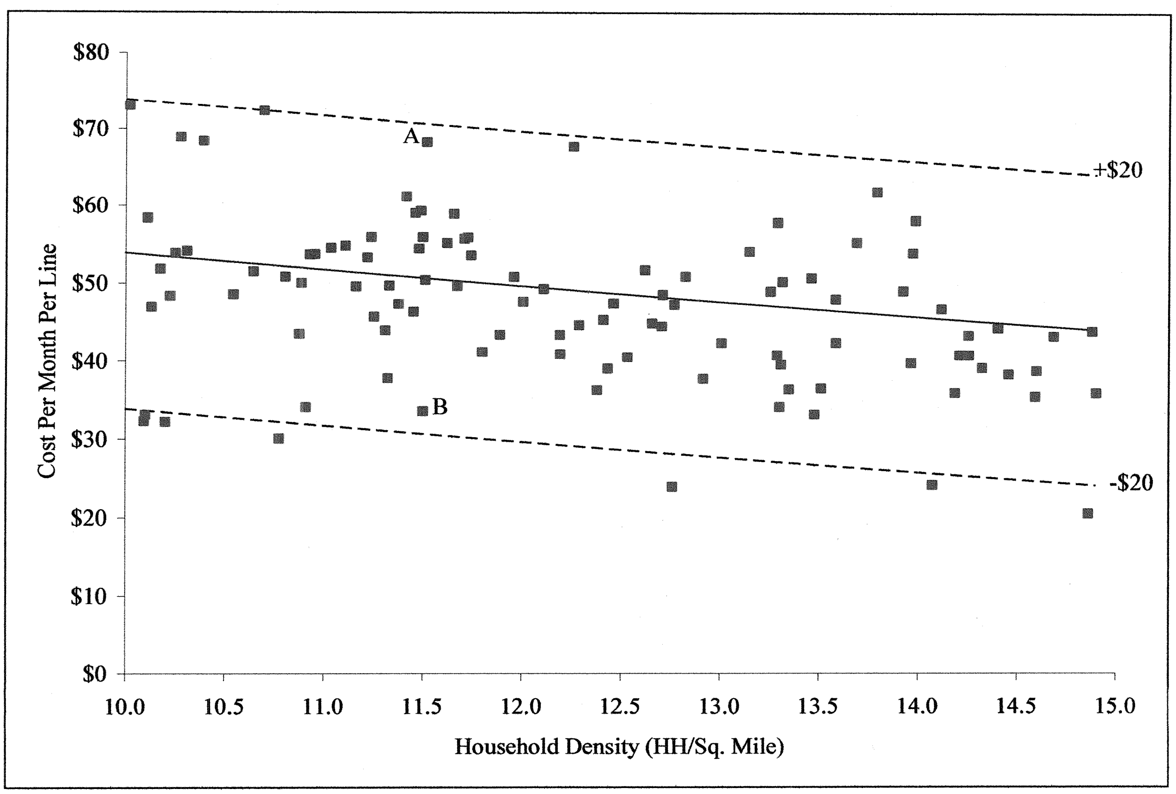
The FR equation does an especially inaccurate job of capturing the variation in loop cost estimates in the lower density areas. The FR equation estimates a loop cost of $67 for an area with a density of 4.5 households per square mile and a cost of $54 for an area with a density of 10 households per square mile. Loop cost estimates from the

BCPM, however, range from $141 to $30 across this same range.

As shown in the following chart, which is a blow-up of the boxed area in Figure 4, even beyond 10 households per square mile, there is considerable variation in loop cost estimates from BCPM that is unexplained by the FR equation.

Figure 4.

Expansion of Boxed Area From Figure 3



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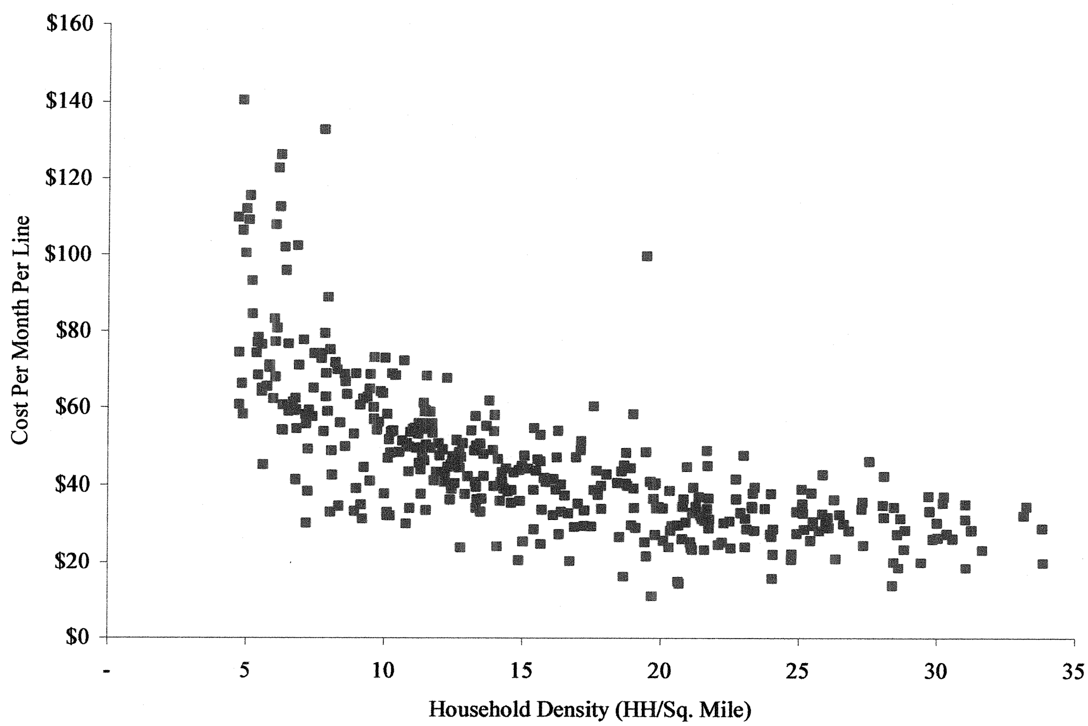

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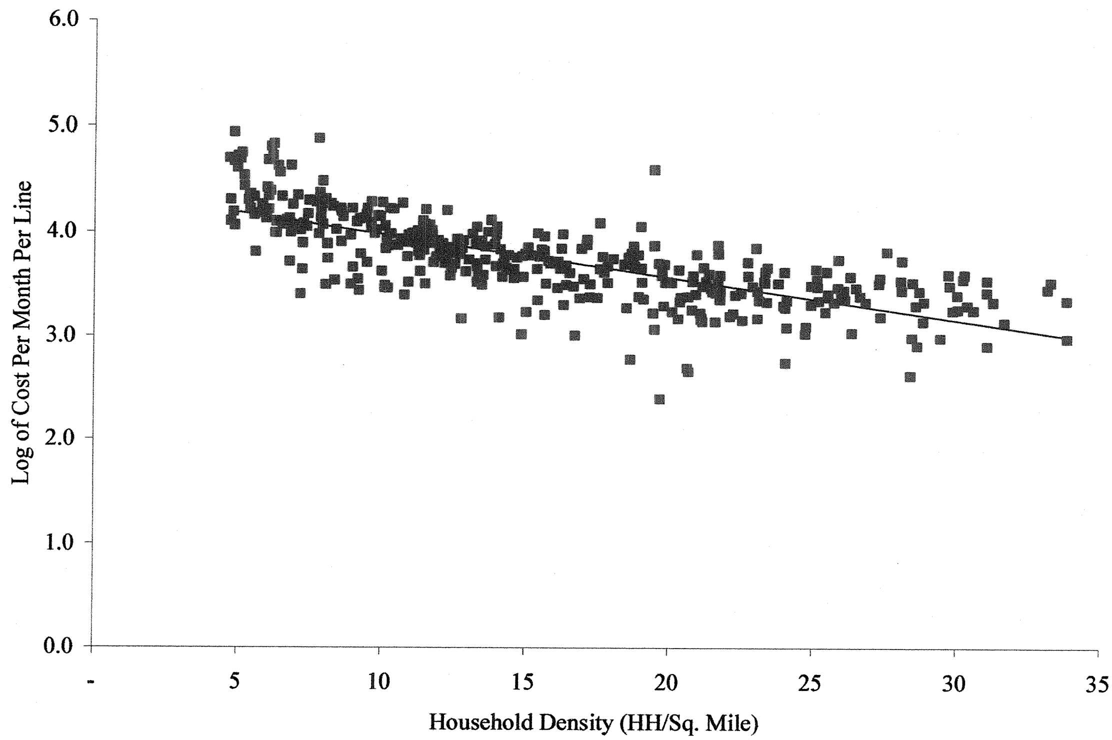

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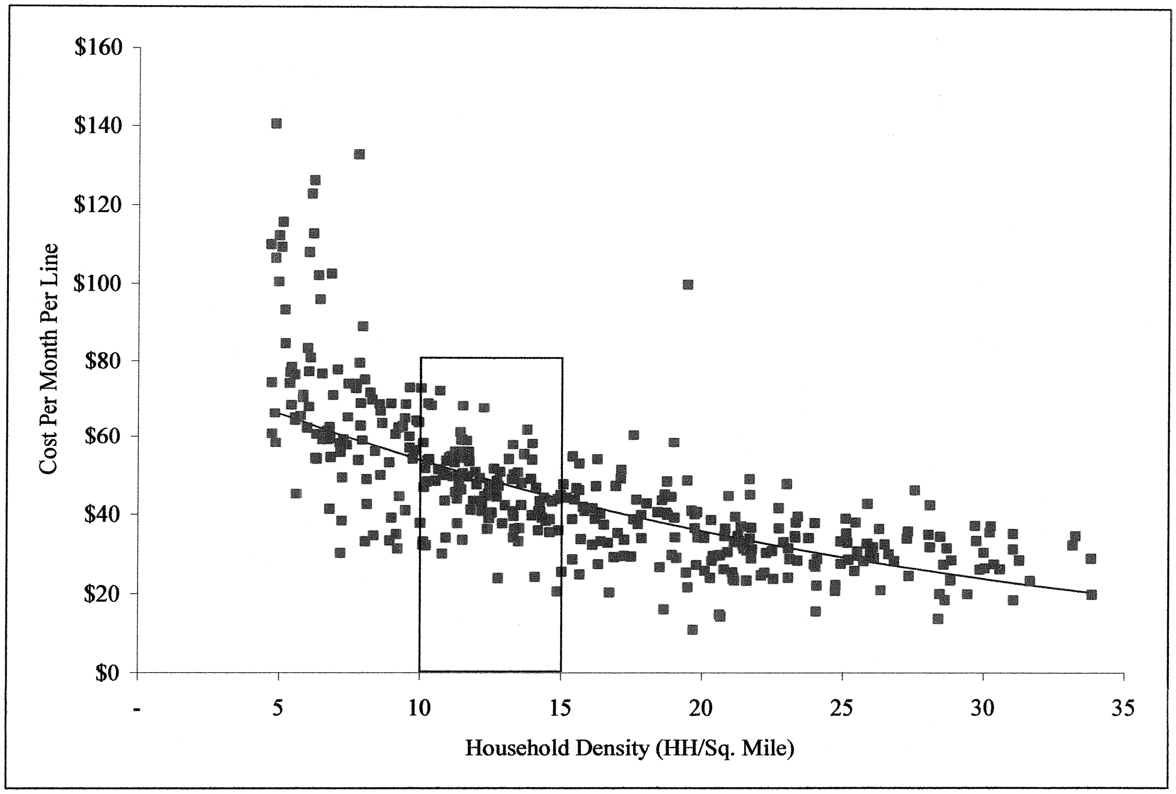

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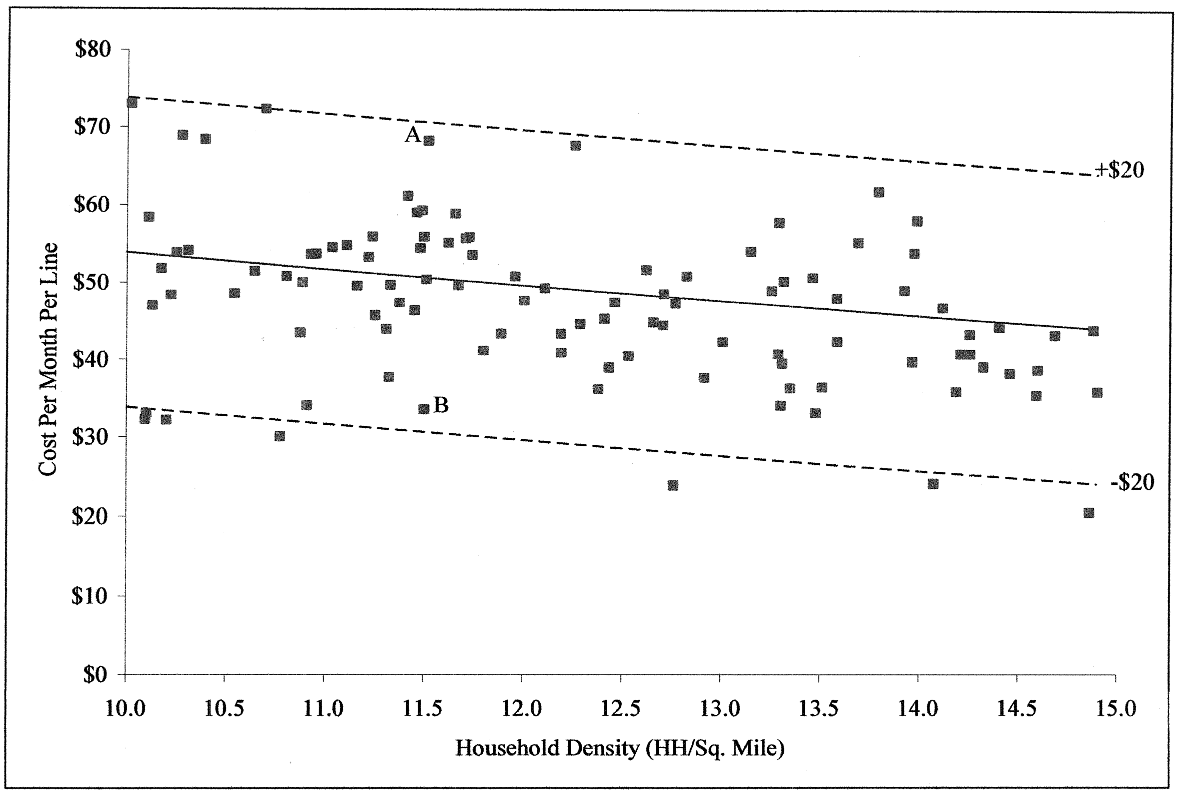

Consider, for example, the loop costs in areas represented by A and B in the above chart. In terms of household density, these are very similar areas, both with 11.5 households per square mile. Yet, the BCPM loop cost estimate for area A is $68 and the loop costs estimate for area B is half that at $34. The FR equation estimates for this density of $51 undershoots the estimate for area A by over 25 percent and overshoots the cost for area B by 50 percent. The broken lines $20 above and below the FR fitted line provide a sense of perspective on the ability of the FR equation to capture variations in loop cost estimates. Although most of the BCPM loop cost estimates are within plus-or-minus $20 of the FR equation in Figure 4, this range represents a substantial margin of error and can only be described a loose fit.[2]

2. The FR Equation Omits Key Variables and is Biased.

A key reason why the FR analysis does not capture a substantial amount of the variation in loop cost estimates is that it omits key variables that drive differences in the cost estimates. Omitting key variables also means that the coefficients in the model are biased.

Recall that the FR analysis is not based upon the real world, but the world described by the BCPM. The observations of loop costs used in the analysis are all from the BCPM computer program, and these loop cost estimates stem directly and

[2] In figure 4, the BCPM cost estimate for point C is $73; the FR cost estimate of $54 undershoots this by 26 percent (($73 - $54) / $73 = 26%). The BCPM cost estimate for point D is $21; the FR cost estimate of $44 overshoots this by 110 percent (($44 - $21) / $21 = 110%).

completely from the algorithms and inputs in the model. This means that, unlike observations from the real world, the variables that produced each cost estimate in BCPM are known. There is none of the uncertainty that exists in the real world about the correct variables, and there are no chance events, measurement errors, or vagaries related to human nature.

To develop a model that comported with census data, the FR analysis ignored important variables that determine costs in the BCPM (and the real world) and used a single explanatory independent variable, household density. This creates a biased equation. As explained by Drs. Pindyck and Rubinfeld, when "a variable is omitted from the 'true' or correct model specification," the coefficients of the remaining variables are biased, and "[t]his bias will not disappear as the sample size grows large."[3] In the case at hand, the true model specification is the BCPM, and the FR analysis intentionally omits numerous variables from this model.

Omitting variables served the purpose in the NUSF-26 docket of attempting to attribute all of the important variation in loop cost to differences in household density, but the resulting equation does a poor job of replicating the cost estimates from the BCPM for TELRIC purposes. By ignoring variables that we know determine variations in cost estimates across density zones, such as line density (which can vary significantly from household density due to variations in business lines), structure sharing, drop lengths, plant mix, and placement costs, the FR analysis creates a poor cost estimator even without considering TELRIC principles. These are all variables that

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[3] Pindyck, Robert S. and Daniel L. Rubinfeld, Econometric Models & Econometric Forecasts, Second Edition, 1981, pp. 128-129.

are known to "cause" variations across density zones in the cost estimate from the BCPM model. In effect, the FR analysis assumes that household density does a credible job of representing the variation in all of these variables, and it does not include any statement or analysis to this effect. In fact, household density does a poor job of representing the variations in all of these other variables, and the FR equation does a poor job of representing the variations in loop cost estimates from the BCPM.

3. The FR Equation is a Poor Substitute for Credible TELRIC Cost Models.

This Commission is engaged in an analysis of whether the FR equation provides a reasonable method for allocating loop costs to geographic areas based upon household density. Even without considering the requirement that unbundled loops be priced according to TELRIC costing principles rather than revenue reallocation, accepting the FR equation for the proposed purpose of reallocating Qwest's loop revenue depends on the ability of the equation to accurately reflect variations in costs. Since the equation is derived from information in the BCPM model, the critical first question is: Does the FR equation capture the variation in loop cost estimates from the model? If it does not, then no other analyses are required and the FR equation should be rejected for even this proposed purpose of loop revenue reallocation.

Another way of phrasing the question is – In terms of recognizing variations in costs, is the FR equation a reasonable replacement for BCPM? An affirmative answer to this question depends upon the ability to reasonably replicate variations in cost estimates from BCPM, which are based upon loop lengths, business and residential line counts, sharing percents, placement costs, plant mixes, and a host of other inputs with a single variable, household density. It would be quite surprising if this were the case, and it would certainly indicate that the Commission's prior cost dockets wasted an enormous amount of time and resources building and refining cost models. For good reason, however, it is not possible to reflect the variations in costs with a singe explanatory variable.

As shown above, there are substantial variations in loop cost estimates that are not explained by variations in household density. Frost and Rosenbaum devised a model that explains most of the variation in the natural logs of loop costs estimates from BCPM, but it is an oversimplified and biased model that does a poor job of explaining the variations in the loop cost estimates themselves, and is not even suitable for its proposed (and in Qwest's view, improper) purpose of loop revenue reallocation.

Conclusion

In view of these problems with the proposed methodology for reallocating loop revenue, and the need to develop TELRIC-based pricing for any zone scheme adopted by the Commission, the Commission should reject the Unifying Method proposal and close these proceedings. However, in the event that the Commission wishes to further explore the proposal, that examination must be done in a full, contested, evidentiary proceeding, properly coordinated with the three pending dockets in NUSF-50.

Dated Friday, May 26, 2006.

Respectfully submitted,

QWEST CORPORATION

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CERTIFICATE OF SERVICE

I certify that a true and correct copy of the Qwest Corporation's Reply Comments to Application No. C-3554/PI-112 was sent via electronic mail and first class, U.S. Mail on May 26, 2006 to the following:

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